

Ultrastructural Study on Germ Cell Differentiation and Reproductive Cycle of the Scallop *Patinopecten yessoensis* on the East Coast of Korea

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ABSTRACT

Gonadosomatic index (GSI), germ cell development, reproductive cycle and sex ratio of the scallop, *Patinopecten yessoensis*, were investigated monthly based on electron microscopical and histological observations. The Golgi apparatus, vacuoles and mitochondria were involved in the formations of carbohydrate yolk precursor, lipid droplets and yolk granules in early vitellogenic oocytes. In the late vitellogenic oocytes, multivesicular body formed by the modified mitochondria and endoplasmic reticulum were involved in the formation of proteid yolk granules near the cortical layer. Glycogen particles, lipid yolk granules and proteid yolk granules were intermingled and became a small immature yolk granules. In mature oocyte, a mature yolk granule was composed of three components; main body, superficial layer, and the limiting membrane.

Monthly changes in the gonadosomatic indice (GSI) of females were closely associated with ovarian developmental phases. Spawning occurred between April and July when the seawater temperature rose to approximately 16-18°C. The process of germ cell development of this species can be classified into five successive stages; in females, early active stage (September to November), late active stage (October to March), ripe stage (February to May), spawning stage (April to July), and recovery stage (July to September). The sex ratio of female: male was not significantly different from a 1:1.